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ABSTRACT

A study provided a systematic review of employment demand studies in agriculture and agribusiness in the United States during the past 22 years and generated recommendations for the development of a consistent reporting format for use in future employment demand studies. Researchers examined 29 studies with respect to the following areas: purpose/objectives, literature review, program area(s), database(s), sampling procedure, description/sample instrument, use of job titles, use of code(s), level of competency, wage/salary information, data collection procedure, description of data analysis, summarization of data, method of dissemination, conclusions/recommendations, problems/limitations, and bibliography. After analyzing these data categories by frequency of occurrence and after seeing the low level of occurrence of the 17 elements in employment demand research projects, researchers formulated 17 separate recommendations calling for the adoption of all the elements in future employment demand research reports. Appended to the report are a summary chart of the employment demand studies by state and year and a bibliography keyed to the summary chart. (MN)

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A STATE OF THE ART REVIEW OF EMPLOYMENT DEMAND STUDIES IN AGRICULTURE/AGRIBUSINESS

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HISTORICAL PERSPECTIVE

There are at least five historical factors which are identified with the development of employment demand research:

- The change from an agricultural society to an industrialized society.
- The dramatic rise in the birth rate following World War II.
- The increase in numbers of women working outside the home.
- The legislation enacted to meet societal issues affecting the poor.
- The increasing pressure by Congress to plan for, and be accountable for dollars spent in education and manpower programs.[1]

Until the time of the Civil War, most human labor was directed to agriculture. After 1865 advances in technology, including agricultural mechanization, redirected efforts to the production and distribution of manufactured goods. The remaining agricultural jobs required increasing levels of skill both on and off the farm.

Two major pieces of legislation are primary factors in the development of employment demand studies. The Vocational Education Act of 1963 (and 1976 Amendments), and the Comprehensive Employment and Training Act of 1973 (CETA). The legislative requirements for these acts have made mandatory the study of local and state labor markets. The studies provide information to planners for the creation of programs to train workers in needed skill areas. At least 65 studies have been undertaken to study educational and employment needs in agriculture and agribusiness in the last 22 years.

OBJECTIVES OF THE STUDY

The objectives of this paper are:

1. To provide a systematic review of Employment Demand Studies in agriculture and agribusiness in the United States during the past 22 years.
2. To generate a set of recommendations for the development of a consistent reporting format for use in future employment demand studies.

METHODS AND PROCEDURES

In early 1980, various educational institutions, state and federal governmental agencies, and individuals who were known to be involved

*New York State College of Agriculture and Life Sciences, A Statutory College of the State University.

[1]Mangum, G. L., Employability, Employment and Income, Salt Lake City, Utah, Olympus Publishing Company, 1976.

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with employment demand research in agriculture/agribusiness were asked for reports of studies which had been completed.

Forty-nine studies were examined by 17 criteria which served for the review. The criteria were:

1. Purpose/Objectives
2. Literature Review
3. Program Area(s)
4. Data Base(s)
5. Sampling Procedure
6. Description/Sample Instrument
7. Use of Job Titles
8. Use of Code(s)
9. Level of Competency
10. Wage/Salary Information
11. Data Collection Procedure
12. Description of Data Analysis
13. Summarization of Data
14. Method of Dissemination
15. Conclusions/Recommendations
16. Problems/Limitations
17. Bibliography

Other studies were eliminated from the review because the reports did not contain sufficient information to allow application of the review critera.

The information abstracted from each report was entered on the summary chart using symbols which represent actual data (see Appendix). The data were analyzed by frequency of occurrence on the summary chart. The results of this analysis were entered on a frequency chart. For purposes of this review, it was assumed that frequency of occurrence indicates perceived importance by researchers. A high frequency = the occurrence of a criterion in <2/3 of reports reviewed. Moderate frequency = the occurrence of a criterion in >2/3 of the reports reviewed, but <1/3. Low frequency = the occurrence of a criterion in >1/3 of reports reviewed.

The criteria used in the review are discussed in the findings, and have formed the basis for recommendations made in this paper.

FINDINGS

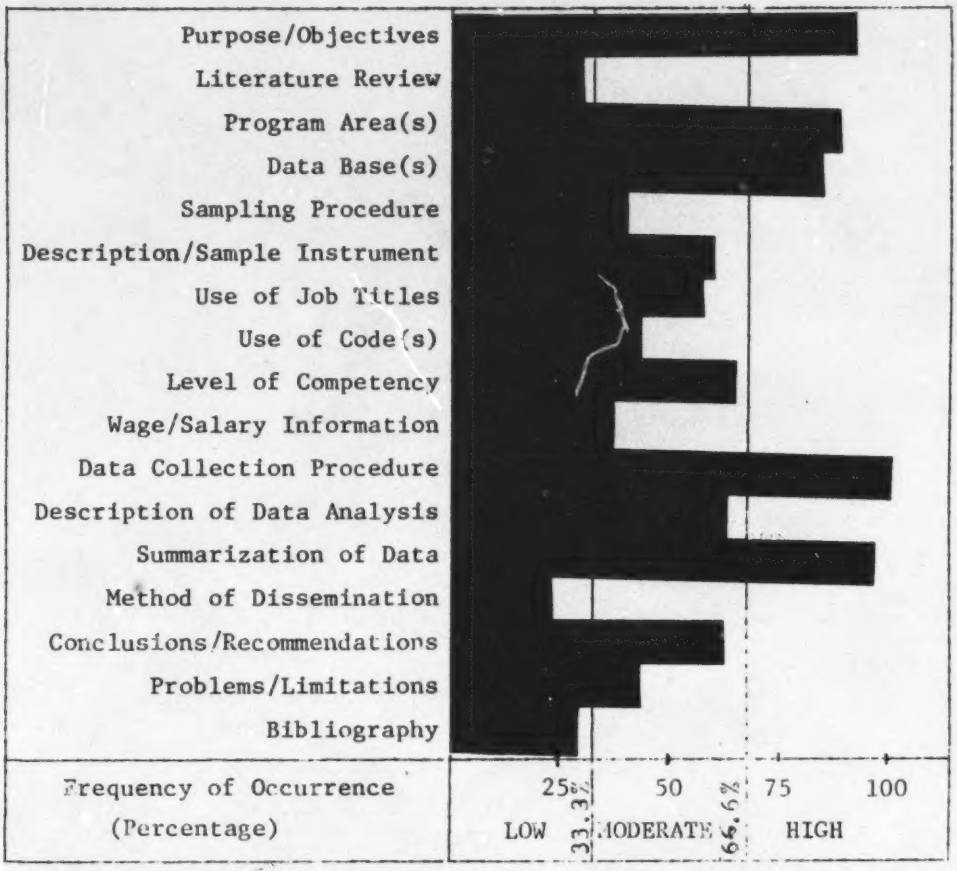
The frequency chart, developed from the analysis of the data contained in the summary chart, is displayed on the following page.

Some of the review criteria require little or no discussion because of their common use in employment demand reporting. However, several criteria were found to be more complex and as such, require some discussion. The criteria are discussed by frequency of occurrence ratings.

High Frequency

Five criteria: Purpose/Objectives, Program Area, Data Base, Data Collection Procedure, and Summarization of Data occurred in over two-thirds of the reports reviewed. The high frequency of occurrence

FREQUENCY OF OCCURRENCE OF REVIEW CRITERIA



of these criteria illustrates a high degree of perceived importance in research reporting. Two criteria: Data Base and Data Collection Procedure require some further discussion.

A wide spectrum of Data Bases (to provide names and addresses of relevant employers) was reported. The most commonly used sources were:

31.0% Unemployment Insurance Files
31.0% Trade and professional organization membership lists
26.5% Telephone yellow pages listings
23.8% Lists taken from previous studies
20.4% Agricultural Census data
16.7% Cooperative Extension agents' listings
16.7% Agricultural teachers' listings
7.1% College and university file listings
7.1% Bureau of Labor Statistics listings

Identification of employers in agriculture/agribusiness is difficult to access in many business areas. Thus, the larger the number of sources used to develop the data base, the broader the spectrum of occupational areas which can be included.

Multiple Data Collection Procedures were identified in several reports. The reasons for this were: to increase the number of

business areas to be sampled, or to increase the rate of return of survey instruments. Procedures reported were:

67.3% some form of interview technique
28.6% mail surveys
20.4% existing data

Interview techniques identified in the reports included the use of telephone and personal interviews.

In over a fifth of the reports reviewed, existing data were gathered from sources such as governmental agencies and professional associations. In a number of business areas, this is a relatively simple and inexpensive procedure for collecting data as compared to survey techniques.

Moderate Frequency

Nine criteria: Sampling Procedure, Description/Sample Instrument, Use of Job Titles, Use of Codes, Level of Competency, Wage/Salary Information, Description of Data Analysis, Conclusions/Recommendations, and Problems/Limitations occurred in between one-third and two-thirds of the reports reviewed. This appears to reflect a moderate degree of perceived importance of these criteria in research reporting. Three of these criteria: Sampling Procedures, Use of Job Titles, and Use of Codes require further discussion.

Without specific information about the sampling procedures used in a study, it would be difficult for readers to interpret the inferences made from collected data, and it is impossible to replicate such studies.

Of the reports which specified the method of sampling:

25.0% samples the total universe of the identified data base
16.6% used a stratified random sample
14.2% used a random sample
4.2% termed a series of projections of existing data as sampling

It was observed that in a number of cases, reports claimed to have reported data by specific job titles. However, several of these studies had actually reported data within occupational clusters, or had used generalized job titles.

The use of codes has apparently increased during the past decade. The emergence of the Occupational Information System (OIS) mandated in the 1976 Vocational Education Amendments may be a major factor.

Low Frequency

Three criteria: Literature Review, Method of Dissemination, and Bibliography occurred in less than one-third of the reports. This would appear to reflect a low degree of perceived importance by research reporters of these elements in reporting.

While a Literature Review may not be of great importance to all users of a research report, it is of extreme importance to persons who are interested in replicating a study or conducting similar research.

The inclusion of the method of dissemination of the results of a study in the report could provide ideas for dissemination strategies to other researchers.

Three types of bibliographies were found in the reports:

1. Those associated with a rationale for conducting an employment demand study;
2. those associated with a review of previous studies; and
3. those which served as a list of sources used to develop a data base for the study.

Researchers should be aware of these and the purpose served by each.

RECOMMENDATIONS FOR A CONSISTENT FORMAT FOR EMPLOYMENT DEMAND REPORTING

Based on the findings, the following list of recommendations is made for a standardized format to be used in employment demand reporting. Development of a consistent reporting format would allow for replication, and the updating of studies. Different studies could be easily compared, and data aggregated for larger geographic areas. It is recommended that every report should:

1. Include a statement of purpose or objectives.
2. Include a literature review, if only for the benefit of those interested in conducting or replicating similar research.
3. Clearly identify program area(s) and geographic area(s) of the study.
4. Specify the data sources from which employers are identified.
5. Specify the sampling procedure used.
6. Include a description or sample copy of the instrument used.
7. Utilize specific job titles which can: provide detailed employment data for program planning, academic counseling, job placement. Further, use of specific job titles will allow for the gathering of information which indicates emerging or obsolescing job titles.
8. Include the codes used to allow for the crosswalk of information from one coding system to another within the OIS.
9. Include competency level because of the value of this information in educational planning.
10. Include wage and salary information because of its importance in vocational counseling.
11. Describe the data collection procedure used. This will enhance the credibility of the report and provide valuable information to other researchers.
12. Provide a description of data analysis to explain how inferences and conclusions were drawn based upon data collected.
13. Summarize raw data in easy-to-understand formats.
14. Include the method of dissemination of the results of the study.
15. Include a conclusions/recommendations section to provide a succint summary of the study, and to allow for easy excerpting.
16. Report problems and limitations encountered in the study and give and explanation of how difficulties were overcome. This section could also serve to point out possible limitations in a particular methodology.
17. Include a bibliography in the report to serve as a "shopping list" of resources for other researchers.

SUMMARY

A number of studies of employment demand research in Agriculture/Agribusiness completed in the last twenty-two years were examined. Forty-nine of these studies were selected for review in this paper.

Seventeen elements were identified and used as criteria for the review. The review yielded a summary chart which reported on the occurrence of each of the elements within the studies. Their occurrence in research reporting was summarized on a frequency chart which indicated the perceived importance of each of the elements by researchers.

Based on the low level of occurrence of the seventeen elements for employment demand research reporting this paper recommended the adoption of the seventeen elements for reporting employment demand research. Not all of the elements may be applicable to studies for updating or in the collection of employment demand data of limited scope.

APPENDIX

KEY TO SUMMARY CHART

SAMPLING PROCEDURE

TU - Total Universe
RS - Random Sample
SS - Stratified Sample
CS - Cluster Stratified Sample
PR - Projections
US - Unclear Sampling Technique

USE OF CODES

USOE - U.S. Office of Education
DOT - Dictionary of Occupational Titles
SIC - Standard Industrial Classifications
SOC - Standard Occupational Code
IPC - Instructional Program Code
CC - Occupational Cluster
LS - Bureau of Labor Statistics
CS - Census Code
IM - Industrial Matrix
NA - Not Applicable

DATA COLLECTION PROCEDURE

MS - Mail Survey
UI - Unspecified Interview
PI - Personal Interview
TI - Telephone Interview
ED - Existing Data
DP - Data Projections

PROGRAM AREAS

A - Agricultural Production
S - Agricultural Sales & Service
M - Agricultural Mechanics
H - Horticulture
F - Forestry
R - Agricultural Resources
P - Agricultural Products
B - Agribusiness
O - Other
NG - Not Given

DATA BASE(S)

AC - Agricultural Census
AT - Agriculture Teachers
AM - Department of Agriculture and Markets
UI - Unemployment Insurance
EA - Agricultural Extension
CU - Colleges and Universities
LS - Labor Statistics
YP - Yellow Pages
TP - Trade and Professional
PS - Previous Surveys
EC - Department of Environmental Conservation
CP - Census of Population
US - U.S. Department of Agriculture
PR - Projections
ED - Existing Data
OS - Other Sources
NG - Not Given

SUMMARY CHART: EMPLOYMENT DEMAND STUDIES BY STATE AND YEAR USING SELECTED CRITERIA

STATE AND DATE OF STUDY	REVIEW CRITERIA															
	PURPOSE/OBJECTIVES	LITERATURE REVIEW	PROGRAM AREA(S)	DATA BASE(S)	SAMPLING PROCEDURE	DESCRIPTION/SAMPLE INSTRUMENT	USE OF JOB TITLES	USE OF CODE(S)	LEVEL OF COMPETENCY	WAGE/SALARY INFORMATION	DATA COLLECTION PROCEDURE	DESCRIPTION OF DATA ANALYSIS	SUMMARIZATION OF DATA	METHOD OF DISSEMINATION	CONCLUSIONS/ RECOMMENDATIONS	PROBLEMS/ LIMITATIONS	BIBLIOGRAPHY
Alabama																	
1. 1978	Yes	No	B	PS	TU	No	No	NO	Yes	No	UI	No	Yes	No	No	No	No
Arizona																	
1. 1979	Yes	Yes	A,S,M H,R	PS	RS	No	Yes	No	No	No	UI	No	Yes	No	No	No	Yes
2. 1974	Yes	Yes	A,S,M H,R	PS	RS	Yes	Yes	No	Yes	Yes	TI	Yes	Yes	No	Yes	No	Yes
3. 1973	Yes	Yes	A.H,M S,A	AT,OS	TU	No	Yes	USOE	Yes	Yes	UI	Yes	Yes	No	Yes	Yes	Yes
California																	
1. 1979	Yes	No	A,S,B,M P,H,F,R	EA,YP OS	RS	Yes	Yes	DOT	Yes	Yes	PI	Yes	Yes	No	Yes	No	Yes
2. 1971	Yes	No	NG	NG	US	No	No	No	No	No	PM,MS ED	No	Yes	No	Yes	No	No
Colorado																	
1. 1981	Yes	Yes	A,S,M F,B,H R,P,O	UI, TP	SS	Yes	Yes	SIC SOC	No	Yes	PI	Yes	Yes	Yes	Yes	Yes	Yes
Connecticut																	
1. 1974	Yes	Yes	A,S,M,P H,R,F,O	AT,EA US,CU YP,AC OS	RS	Yes	Yes	No	Yes	Yes	PI	Yes	Yes	Yes	Yes	Yes	Yes
Florida																	
1. 1973	Yes	No	A,S,M,P H,R,F	NG	RS	Yes	Yes	No	Yes	Yes	PI	Yes	Yes	Yes	No	No	No
2. 1971	Yes	No	H,F,A M,P,O	UI,OS	RS	No	No	SIC	No	No	MS,PI	Yes	No	Yes	No	No	No
Georgia																	
1. 1964	Yes	No	A	AC,OS	PR	No	No	No	Yes	Yes	ED	Yes	Yes	No	Yes	Yes	Yes
Illinois																	
1. 1966	Yes	No	O	YP	SS	No	Yes	No	Yes	No	UI	Yes	Yes	No	No	No	No
2. 1962	Yes	No	NG	YP,OS	CS	No	No	No	Yes	No	PI	Yes	Yes	No	Yes	No	
Indiana																	
1. 1977	Yes	Yes	P,M,S,A H,F,R	UI	SS	Yes	Yes	SIC	Yes	No	MS,TI	Yes	Yes	No	Yes	No	No
Kansas																	
1. Undated	Yes	No	M,S,P	OS	SS	No	Yes	No	Yes	Yes	UI	Yes	Yes	No	Yes	No	No
Louisiana																	
1. 1965	Yes	No	M,S,F,H P,R,A	UI,TP YP,OS	TU	Yes	Yes	No	Yes	Yes	PI	Yes	Yes	No	Yes	No	No
2. 1965	Yes	No	M,S,F,H P,R,A	UI,TP YP,OS	TU	Yes	Yes	No	Yes	Yes	UI	Yes	Yes	No	Yes	No	No
3. 1965	Yes	No	M.S.F,H P,R,A	UI,TP YP,OS	TU	Yes	Yes	No	Yes	Yes	PI	Yes	Yes	No	Yes	No	No
4. 1965	Yes	No	M.S.A,H P,R,A	UI,TP YP,OS	TU	Yes	Yes	No	Yes	Yes	PI	Yes	Yes	No	Yes	No	No
Maryland																	
1. 1979	No	No	A,S,M H,O	NG	NG	Yes	No	No	No	No	UI	Yes	Yes	No	No	No	No
Michigan																	
1. 1970	Yes	No	A,S,H,R	YP	US	Yes	Yes	No	Yes	No	PI	Yes	Yes	Yes	Yes	No	No
2. 1965	Yes	No	NG	TP,OS	US	Yes	No	No	Yes	Yes	MS	No	Yes	No	Yes	Yes	No
Minnesota																	
1. 1973	Yes	No	A,M,S H,R,P	AT,CU	TU	Yes	No	No	Yes	No	UI	Yes	Yes	No	No	No	No
Missouri																	
1. 1977	No	No	NG	NG	TU	No	Yes	USOE SIC CC	No	No	ED	Yes	Yes	No	No	Yes	No
Montana																	
1. 1979	Yes	No	S,M,H R,P,F	PS,OS	TU	Yes	Yes		Yes	Yes	MS	Yes	Yes	No	Yes	Yes	No

SUMMARY CHART: EMPLOYMENT DEMAND STUDIES BY STATE AND YEAR USING SELECTED CRITERIA

STATE AND DATE OF STUDY	REVIEW CRITERIA: PURPOSE/OBJECTIVES	LITERATURE REVIEW	PROGRAM AREA(S)	DATA BASE(S)	SAMPLING PROCEDURE	DESCRIPTION/SAMPLE INSTRUMENT	USE OF JOB TITLES	USE OF CODE(S)	LEVEL OF COMPETENCY	WAGE/SALARY INFORMATION	DATA COLLECTION PROCEDURE	DESCRIPTION OF DATA ANALYSIS	SUMMARIZATION OF DATA	METHOD OF DISSEMINATION	CONCLUSIONS/ RECOMMENDATIONS	PROBLEMS/ LIMITATIONS	BIBLIOGRAPHY
New Jersey																	
1. 1968	Yes	No	A,P	EA,AC OS	US	No	No	No	No	Yes	MS,PE	No	Yes	No	Yes	No	No
New York																	
1. 1981	Yes	Yes	A,H,M F,R,P S,O	VI,EA,PS TP,AC,EC YP,AM,CU OS	TU SS	Yes	Yes	SIC DOT IPC	Yes	No	PI,MS TI,ED	Yes	Yes	Yes	Yes	Yes	Yes
2. 1979	No	No	M	TP	US	No	No	No	No	No		Yes	Yes	Yes	No	Yes	No
3. 1974	Yes	No	S	PS,EA AM,OS	RS	Yes	No	No	No	No	PI	No	Yes	No	No	No	No
4. 1971	Yes	No	A,S,P M,H,O	YP,EA TP,AT OS	US	No	No	USOE	No	No	TI,PI	No	Yes	Yes	Yes	Yes	No
5. 1968	Yes	Yes	H,S,F M,O	PS,UI,OS	SS	Yes	Yes	SIC DOT	Yes	No	MS,TI	Yes	Yes	No	Yes	Yes	No
6. 1965	Yes	Yes	M,S,A, F,H,O	YP,AT PS,OS	SS	Yes	Yes	DOT	Yes	No	UI	No	Yes	No	Yes	Yes	No
North Carolina																	
1. 1962	Yes	Yes	P,O	ED,AC,OS	PR	Yes	No	No	No	No	PR	Yes	Yes	No	No	Yes	No
Nevada																	
1. 1968	Yes	Yes	R,P,H M,O	NG	US	No	No	No	Yes	No	PI	Yes	Yes	No	Yes	Yes	Yes
Ohio																	
1. 1974	Yes	Yes	A,S,M, O,P,H,R	UI,ED,OS	US	No	No		No	No	PR	Yes	Yes	Yes	Yes	No	No
2. 1963	Yes	No	NG	NG	US	No	No	No	No	No		No	No	No	No	No	No
Oklahoma																	
1. 1980	Yes	No	A,S,P H,R,F	LS,UI,OS	US	No	Yes	DOT SIC	Yes	No	DP	No	Yes	No	No	Yes	No
2. undated	Yes	No	M,A,H S,P	AT,OS	US	No	Yes	No	Yes	No	PI	Yes	Yes	Yes	Yes	Yes	No
Oregon																	
1.	No	No	NG	NG	US	Yes	Yes	LS USOE	No	No	MS	No	Yes	No	No	No	No
Pennsylvania																	
1. 1965	Yes	No	M,S,A F,H,R	AT,EA,AC TP,OS	US	Yes	Yes	SIC	Yes	Yes	ED,PI	No	Yes	No	No	No	No
Texas																	
1. 1979	Yes	Yes	M,H	CP,TP	TU	Yes	Yes	CS USOE	Yes	No	MS,TI	Yes	Yes	No	Yes	Yes	Yes
2. 1973	Yes	No	A,S,H F,M,O	DA,AC,TP LS,PS	US	Yes	Yes	CS	Yes	No	PI	Yes	Yes	Yes	Yes	Yes	Yes
Washington																	
1. 1959	Yes	No	O	OS	SS	Yes	No	No	Yes	Yes	UI	No	Yes	No	Yes	No	No
Wisconsin																	
1. 1976	Yes	Yes	A,P,M S,H,R	PS,AC UI,OS	US	No	Yes	CS	No	No	UI	Yes	Yes	No	Yes	Yes	No
NATIONAL MANPOWER STUDIES																	
1. 1980	Yes	No	A,S,M P,H,F R,O	AC,LS ED,UI	US	No	No	DOT SOC IM	No	No	DP	No	Yes	No	No	No	Yes
2. 1980	Yes	No	O	TP,YP,OS	US	Yes	No	No	Yes	Yes	MS	Yes	Yes	No	No	No	Yes
3. 1978	Yes	No	O	TP,YP,OS	US	Yes	No	No	Yes	Yes	MS	Yes	Yes	No	No	No	Yes
4. 1978	Yes	No	NG	NG	TU	Yes	NA	NA	Yes	No	MS,TI	No	Yes	No	Yes	Yes	No
5. 1974	Yes	No	A,S,H, F,O	AC,DA,OS	US	Yes	Yes	Yes	No	No	MS	No	Yes	No	No	Yes	No

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